

Application No. 10/591,198

REMARKS

Favorable reconsideration and allowance of the subject application are respectfully requested. Claims 1-2 and 4-8 are pending in the present application, with claims 1 and 8 being independent. Claim 3 was previously cancelled. Claim 8 stands withdrawn from consideration.

Claim Amendments

By this amendment, editorial revisions are made in claims 1, 2 and 8. Claim 1 is also amended to state that no outgassing occurs "below" 700 degrees C. consistent with the disclosure at page 1 of the specification. This amendment clarifies the meaning of this limitation. No new matter is added by this amendment.

Restriction Requirement

The Examiner withdraws from consideration method claim 8 for the reason that product claims 1-7 were previously constructively elected for the purpose of examination on the merits. Applicant reserves the right to file a divisional application directed to the embodiment of claim 8.

Claim Rejections under 35 U.S.C. §112

The Examiner rejected claims 1, 2 and 4-7 under 35 U.S.C. §112, second paragraph. This rejection is respectfully traversed.

In response, claim 1 is amended in a manner which is believed to overcome the rejection. The rejection is thus believed to be moot and should be withdrawn.

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Claim Rejections under 35 U.S.C. §103

The Examiner makes the following prior art rejections against the claimed invention:

(1) Claims 1, 2 and 4-7 stand rejected under 35 U.S.C. §103 as being unpatentable over SU '096 in view of Halpern et al; and

(2) Claims 1, 2 and 4-7 stand rejected under 35 U.S.C. §103 as being unpatentable over Anderko et al in view of Melling et al and Halpern et al.

These rejections respectfully are traversed.

In conventional salt cores, a synthetic resin binder was utilized so that the steps of pressing and sintering would not have to be performed. However, these synthetic resin binders are subjected to carbonization and outgassing, and therefore the conventional salt cores need to be pre-heated to a temperature of 600 degrees Celsius in order for the outgassing to occur prior to a casting process. Furthermore, this pre-heating process has additional disadvantages in that suctioning of unwanted gases must be performed, and it is also problematic to place the very hot salt cores into a casting mold.

The present invention utilizes a different binder than the conventional art so that undesirable outgassing does not occur. As a result, the salt cores of the present invention do not need to be heated to a temperature greater than 200 degrees Celsius. Thus, it should be apparent that the present invention solves the problems of the conventional art, e.g. the salt cores of the present invention do not need to be outgassed, and are not difficult to be manipulated into a casting mold, because the

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sintering temperature is substantially lower than the 600 degrees Celsius pre-heating process of the conventional art. In other words, the high temperature pre-heating process of the conventional art can be eliminated.

The Examiner states at page 3 of the Action that "SU '096 substantially shows the invention as claimed except that it does not disclose to make the compact pressure and use graphite parting agent." Indeed, the translation relied upon is completely silent with respect to the use of a compacting step. While the Examiner states that "it is conventional to use a compact molding machine or pressure blowing machine for pressuring the foundry mixture during core making process", no factual support is provided for this assertion.

As noted above, the Examiner acknowledges that SU '096 fails to teach or suggest the use of graphite as a parting agent. However, the Examiner alleges that it would have been obvious to combine SU '096 with Halpern et al., because Halpern et al. "show [sic] that it is conventional to incorporate graphite as [sic] parting agent in the mold mixture to facilitate the foundry process", and that "It would have been obvious to incorporate graphite in the mold mixture of SU '096 in view of the advantage."

However, the invention of Halpern et al is distinct from that of SU '096. Halpern et al is directed to the formation of a rigid continuous form such as a core and shell mold by mixing inorganic granules such as sand with a resin and a curing agent. The mixture is ultimately cured at high temperature and shaped. While Halpern et al refers at col. 2, lines 32-35 to the presence of a lubricant in the mixture ("Examples of lubricants that we may use are the parting agents such as calcium or zinc stearate, talc, graphite, higher fatty acid amides, diamides, glycerine fatty esters, and silicone oils"),

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such lubricants are employed with an entirely different type of composition than used in applicant's invention. There is thus no factual basis for the Examiner's conclusion that it would be obvious to add such a lubricant to the composition of SU '096.

The Anderko et al reference is directed to a salt core containing synthetic resin and water-glass binders. The Examiner acknowledges that Anderko et al fails to teach or suggest both the use of the claimed binder and the use of graphite as a parting agent. The Examiner, however alleges that Melling teaches the binding agent, and that Halpern et al teaches the use of graphite as a parting agent, and that it would be obvious to modify Anderko et al to substitute a phosphate and/or borate binder for the resin binder, and that it would further be obvious to use graphite as a parting agent.

Applicant respectfully submits that Anderko teaches away from the present application. Anderko clearly teaches in col. 1, lines 54-57, that "[i]t is an object of the invention to provide...[a core]...which can be produced without compression and sintering," emphasis added. Furthermore, it is taught in col. 1, line 62, that a synthetic resin is used as a binder. Anderko exhibits precisely those problems that the present invention solves. As noted above, because Anderko utilizes a synthetic resin, the cores in Anderko must be subjected to outgassing. See col. 2, lines 15-20 of Anderko. Furthermore, Anderko also clearly teaches that compression and sintering is not required – thereby also clearly teaching away from the claimed invention. Thus, because Anderko clearly teaches away from the present application, any combination of the teachings of the prior art references with Anderko simply cannot render the claims unpatentable.

Furthermore, applicant also respectfully submits that the combination of Anderko,

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Melling and Halpern et al is improper because each would render the other inoperable. In addition, even assuming that these reference could be combined, applicant respectfully submits that the Examiner simply improperly took the applicant's disclosure as a blueprint for piecing together the prior art to defeat patentability, which is the essence of hindsight.

Dependent claims 2 and 4-7 should be considered allowable at least for depending from an allowable base claim.

Accordingly, withdrawal of the outstanding rejections is respectfully requested.

CONCLUSION

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Martin R. Geissler, Applicants' Attorney at 1.703.621.7140 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 50-3828 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully Submitted,



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